UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

OPP OFFICIAL RECORD
HEALTH EFFECTS DIVISION
SCIENTIFIC DATA REVIEWS
EPA SERIES 361

**MEMORANDUM**

Date: 25-OCT-2007

Subject: **Thiencarbazone-Methyl.** Section 3 Registration for Use on Corn, Wheat, and Soybean. Request for Tolerance Method Validation (TMV).

| | | | |
|---|---|---|---|
| DP#: | 345004 | Decision#: | 378451 |
| PC Code: | 015804 | Registration #: | 7F7208 |
| 40 CFR 180. | Xxx | | |

From: Peter Savoia, Chemist
Reregistration Branch 3 (RRB3)
Health Effects Division (HED) (7509P)

Through: William H. Donovan, Ph.D., Chemist
RRB3/HED (7509P)

To: William Chism, Ph.D., Chief
Analytical Chemistry Laboratory (ACL)
Biological & Economic Analysis Division (BEAD) (7503P)

Bayer CropScience has submitted a petition for the use of thiencarbazone-methyl (methyl 4-({[(3-methoxy-4-methyl-5-oxo-4,5-dihydro-1*H*-1,2,4-triazol-1-yl)carbonyl]amino}sulfonyl)-5-methylthiophene-3-carboxylate) on corn, wheat, and soybean seed. It is a new active ingredient which is being proposed for registration as an herbicide with several end use products formed to control a variety of economically important weed species. This submission is being undertaken as an international joint work-share project along with PMRA Canada and PSD United Kingdom. In doing so, Bayer Cropscience is applying for harmonized tolerances in order to support the import/export of these crop commodities.

In accordance, Bayer Cropscience is proposing the establishment of permanent tolerance levels for residues of thiencarbazone-methyl, also designated as compound BYH 18636, in/on corn, wheat, and soybean. Bayer is also requesting that permanent tolerances for thiencarbazone-methyl which may occur in/on several livestock commodities be established as well. A listing of the crop and livestock commodities along with the corresponding tolerance levels being proposed is provided in Attachment 1 for review.

OCT 31 RECD, 2007

To enforce the proposed tolerance levels found in Attachment 1, Bayer recommends the use of two analytical methods for determining thiencarbazone-methyl in plant and animal commodities. They work using an acetonitrile/water extraction procedure followed by quantitation with a High-Performance Liquid Chromatography/Mass Spectrometry/Mass Spectrometry (HPLC/MS/MS) instrumental technique. In practice, Bayer method #00963 is the protocol used for the determination of crops and # 01022 is the one followed for animal commodities. Both procedures have undergone successful Independent Laboratory Validation (ILV) by the registrant and are capable of providing a 0.01 ppm Limit of Quantitation (LOQ).

To further substantiate the performance of the Bayer methodology, adequate radiovalidation studies have also been provided. Multi-Residue Method (MRM) testing of thiencarbazone-methyl and its metabolites indicate they are not suitable for analysis using the FDA Pesticide Analytical Method (PAM) protocols. For information purposes, Bayer Cropscience has submitted a summary of their analytical methodology for the determination of thiencarbazone-methyl and accompanying validation studies. The studies which document the method development efforts put forward by Bayer Cropscience for determining thiencarbazone-methyl can be found in Attachment 2 and are as follows:

MRID No. 47070032 Schmeer, K. 2007. [Dihydrotriazole-3-(14-Carbon)] BYH 18636 and [Thiophene-4-Carbon] BYH 18636: Extraction Efficacy of the Residue Analytical Method for the Determination of BYH 18636 Residues in Animal Matrices using Aged Radioactive Residues. Unpublished study prepared by Bayer Ag, Institute of Product Information & Residue Analysis Project Numbers: MEF/06/292, M9991696/9, and M/282899/01/2. 53 pages.

MRID No. 47070046 Bongartz, R. 2006. [Dihyrotriazole-3-(14-Carbon)] BYH 18636: Extraction Efficiency of the Residue Analytical Method for the Determination of BYH 18636 Residues in Plant Matrices using Aged Radioactive Residues. Unpublished study prepared by Bayer Ag, Institute of Product Information & Residue Analysis Project Numbers: MEF/05/504, M9991546/3, and M/274486/01/2. 52 pages.

MRID No. 47070047 Zimmer, D. and Wieland, K. 2006. Analytical Method 00990 for the Determination of Residues of BYH 18636 and its Metabolites in Animal Matrices. Unpublished study prepared by Bayer Ag, Institute of Product Information & Residue Analysis Project Numbers: P603065518, M/281559/02/2, and 00990. 188 pages.

MRID No. 47070048 Zimmer, D. and Kuppels, U. 2007. Analytical Method 01022 for the Determination of Residues of BYH 18636 and BYH 18636-MMT in Animal Matrices. Unpublished study prepared by Bayer Ag, Institute of Product Information & Residue Analysis Project Numbers: 01022, MR/06/175, and D/40789. 131 pages.

MRID No. 47070049 Class, T. 2007. Independent Laboratory Validation of Bayer Cropscience Method No. 01022 for the Determination of Residues of BYH 18636 and its Metabolite BYH 18636-MMT in Animal Matrices by LC/MS/MS. Unpublished study prepared by Bayer Ag, Institute of Product Information & Residue Analysis Project Numbers: P1138G, P613065528, and M/284346/02/2. 58 pages.

MRID No. 47070050 Class, T. 2006. Independent Laboratory Validation of Bayer Cropscience Method No. 00963 for the Determination of Residues of BYH 18636 and its Metabolites BYH 18636-N-Desmethyl and BYH 18636-MMT-Glucose in/on Plant Materials by LC/MS/MS. Unpublished study prepared by Bayer Ag, Institute of Product Information & Residue Analysis Project Numbers: P1125G, P612065524, and M/280706/01/2. 60 pages.

MRID No. 47070101 Zimmer, D. and Philipowski, C. 2006. Analytical Method 00963 for the Determination of Residues of BYH 18636 and its Metabolites BYH 18636-N-desmethyl and BYH 18636-MMT-glucose in/on Plant Matrices by HPLC-MS/MS. Unpublished study prepared by Bayer Ag, Institute of Product Information & Residue Analysis Project Numbers: P602055513, RAUBX009, and 00963. 172 pages.

MRID No. 47070102 Memmel, A. 2007. PAM I Multiresidue Protocol Testing of BYH 18636 and its Metabolites. Unpublished study prepared by Bayer Ag, Institute of Product Information & Residue Analysis Project Numbers: 1726, RAGSM007, and M/285749/01/1. 263 pages.

In support of this registration action, RRB3 is requesting that ACL/BEAD perform a TMV of the proposed Bayer enforcement protocols to ensure the efficacy of these methodologies. The basis for this evaluation will be determining the adequacy of these methods to analyze the thiencarbazone-methyl parent compound, as well as its BYH 18636-N-desmethyl (M07), -MMT (M21), and -MMT-glucoside (M22) metabolites. It could be performed as either a paper-audit of the Bayer method development studies found in Attachment 2 or through the actual bench-testing of these protocols. For bench-testing, please follow the reporting format outlined in Attachments 3 and 4 with all samples (including the controls) being analyzed in duplicate. In addition, please include the repository ordering code for all reference standards used to test these protocols.

An important aspect for undertaking this in-house TMV is to determine whether all of the necessary instructions are included in the proposed enforcement method. As such, your laboratory scientists should have minimal contact with Bayer when conducting this assessment. Please document in your report any problems which may be encountered in the Bayer methodology (as written) when performing your evaluation. For the bench-testing of the Bayer methodology, please complete Attachments 3 and 4 by including them in your report along with all relevant information and supporting documentation. Following this determination, Bayer Cropscience will be informed of any deficiencies in their procedures and asked to resolve them. For your information, please be advised that the RD Product Manager for the registration of thiencarbazone-methyl is Hope Johnson and she can be reached at (703) 305-5410.

Please address and send your report to Catherine Eiden, Branch Chief, RRB3/HED, 7509P. To facilitate this process, a bean sheet for the preparation of a TMV report for HED is included in Attachment 5. If you need any further information, please feel free to call me at (703) 308-8794.

Attachment 1: Proposed tolerances (from Section F of PP# 7F7208)
Attachment 2: CD containing the following studies; 47070032, 47070046-47070050, 47070101, and 47070102.
Attachment 3: Method report form - Plants
Attachment 4: Method report form - Livestock
Attachment 5: Bean sheet for TMV request (DP #: 345005; not available electronically)

# Attachment 1: Proposed Tolerances (from Section F of PP# 7F7208)

Bayer Cropscience has requested the establishment of the permanent tolerances for thiencarbazone-methyl (methyl 4-({[(3-methoxy-4-methyl-5-oxo-4,5-dihydro-1*H*-1,2,4-triazol-1-yl)carbonyl]amino}sulfonyl)-5-methylthiophene-3-carboxylate) in or on the following RACs:

| | | | |
|---|---|---|---|
| Corn, field, grain | 0.01 ppm | Soybean, seed | 0.01* |
| Corn, sweet, grain | 0.01 ppm | Wheat, grain | 0.01 |

In addition, Bayer has requested permanent tolerances for the combined residues of thiencarbazone-methyl and its metabolites N-desmethyl (M07), and MMT-glucoside (M22) all expressed in parent equivalents in or on the following RACs:

| | | | |
|---|---|---|---|
| Corn, field, forage | 0.03 ppm | Wheat, straw | 0.02 |
| Corn, field, stover | 0.04 ppm | Wheat, forage | 0.09 |
| Corn, sweet, forage | 0.15 ppm | Soybean, forage | 0.04* |
| Corn, sweet, stover | 0.04 ppm | Soybean, hay | 0.15* |
| Wheat, hay | 0.02 | Cotton, gin byproducts | 0.15* |

In addition, Bayer has requested permanent tolerances for the combined residues of thiencarbazone-methyl and its metabolite MMT (M21) expressed in parent equivalents in or on the following livestock commodities:

| | | | |
|---|---|---|---|
| Milk | 0.01 ppm | Hog, fat | 0.01 ppm |
| Cattle, meat | 0.01 ppm | Hog, meat byproducts | 0.05 ppm |
| Cattle, fat | 0.01 ppm | Horse, meat | 0.01 ppm |
| Cattle, meat byproducts | 0.05 ppm | Horse, fat | 0.01 ppm |
| Goat, meat | 0.01 ppm | Horse, meat byproducts | 0.05 ppm |
| Goat, fat | 0.01 ppm | Sheep, meat | 0.01 ppm |
| Goat, meat byproducts | 0.05 ppm | Sheep, fat | 0.01 ppm |
| Hog, meat | 0.01 ppm | Sheep, meat byproducts | 0.05 ppm |

* Inadvertent residues accumulated in rotational crops

**Attachment 2: CD containing the following studies 47070032, 47070046 – 47070050, 47070101, and 47070102.**

# Attachment 3: Method Report Form - Plants

Method #00963 is detailed in the following study:

> MRID No. 47070101 Zimmer, D. and Philipowski, C. 2006. Analytical Method 00963 for the Determination of Residues of BYH 18636 and its Metabolites BYH 18636-N-desmethyl and BYH 18636-MMT-glucose in/on Plant Matrices by HPLC-MS/MS. Unpublished study prepared by Bayer Ag, Institute of Product Information & Residue Analysis Project Numbers: P602055513, RAUBX009, and 00963. 172 pages.

Please do not use control values for recovery corrections. Please do not report control values as 0.0 ppm; accurately state your limit of detection and note any commodity coextratives that could change the recovery values reported.

| Matrix | analyte | Fortification (ppm) | ppm Found | % recovery |
|---|---|---|---|---|
| Sweet corn, grain | Thiencarbazone-Methyl | 0.00 | | |
| | | 0.005 | | |
| | | 0.01 | | |
| Sweet corn, forage | | 0.00 | | |
| | | 0.01 | | |
| | | 0.075 | | |
| | | 0.15 | | |
| Sweet corn, forage | BYH 18636–N-desmethyl (M07) | 0.00 | | |
| | | 0.01 | | |
| | | 0.075 | | |
| | | 0.15 | | |
| | BYH 18636-MMT-glucoside (M22) | 0.00 | | |
| | | 0.01 | | |
| | | 0.075 | | |
| | | 0.15 | | |

# Attachment 4: Method Report Form - Livestock

Method #01022 is detailed in the following study:

> MRID No. 47070048 Zimmer, D. and Kuppels, U. 2007. Analytical Method 01022 for the Determination of Residues of BYH 18636 and BYH 18636-MMT in Animal Matrices. Unpublished study prepared by Bayer Ag, Institute of Product Information & Residue Analysis Project Numbers: 01022, MR/06/175, and D/40789. 131 pages.

Please do not use control values for recovery corrections. Please do not report control values as 0.0 ppm; accurately state your limit of detection and note any commodity coextratives that could change the recovery values reported.

| matrix | Analyte | Fortification (ppm) | ppm Found | % recovery |
|---|---|---|---|---|
| Cattle, milk | Thiencarbazone-Methyl | 0.00 | | |
| | | 0.005 | | |
| | | 0.01 | | |
| Cattle, meat byproducts | | 0.00 | | |
| | | 0.01 | | |
| | | 0.05 | | |
| Cattle, milk | BYH 18636-MMT (M21) | 0.00 | | |
| | | 0.005 | | |
| | | 0.01 | | |
| Cattle, meat byproducts | | 0.00 | | |
| | | 0.01 | | |
| | | 0.05 | | |

# Attachment 5: Bean Sheet for Preparing the TMV Report for HED (DP #: 345005; not available electronically)

13544

# R154357

**Chemical:** Thiencarbazone-methyl

**PC Code:**
**015804**

**HED File Code:** 14100 Other Risk Documents
**Memo Date:** 10/25/2007
**File ID:** DPD345004
DPD345005
DPD339779
**Accession #:** 000-00-0122

HED Records Reference Center
11/15/2007